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TO THE HONORABLE

COLONEL,

SPENCER COWPER.

SIR,

WHATEVER contributes to the immediate Welfare of Society, should always appear under the Patronage of Promoters of Arts and Sciences. This Treatise therefore, wherein proper Methods are

DEDICATION.

are offered to restore Health, so easily lost, and so difficultly regained, justly claims your Protection: and the Name of COWPER prefixed to the following practical Observations in Surgery, will give Sanction to the early Production of an Italian Writer in England, and confer an everlasting Honor on,

Sir,

Your most obliged

Humble Servant,

London,
March, 1779.

L. NANNONI.

P R E F A C E.

THE great benefits arising from the practice of Surgery, induce me to publish the few following facts, founded on actual experiments, and if they should be the means of throwing any light on the established methods for curing the Hydrocele, I shall think myself amply rewarded. It is true, that after the many illustrations, and incomparable rules of Garenggeot, Bertrandi, Le Dran, Sharp, Pott,

P R E F A C E.

Pott, Else, Sabatier, Louis, and others, little more can be expected on this interesting subject. But too much I think, can never be advanced on a subject, whose object is the health and happiness of mankind; and it is a melancholy truth, that not only health and happiness, but even life itself has been often lost for want of attending to the nature and progress of disease. Observations in Surgery are of the utmost consequence, but how few have been able to communicate what they have seen to others? I labor under
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P R E F A C E.

the very great disadvantage, of being obliged to express my thoughts in a foreign language, but I hope for that indulgence so impartially granted by a candid Public, to all the investigators of truth and knowledge, daily resorting to this learned kingdom.

ERRATA.

Page 12, line 12, for fouth read fourth

- 15 — 16, *f. extravasates r. extravasates,*
- 17 — 1, *f. cure r. cure,*
- 23 — 1, *f. vent. r. event.*
- 31 — 6, *f. unfortunately r. unfortunately*
- 39 — 3, *f. compness r. compres*
- 54 — 5, *f. were r. where*

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T R E A T I S E
O N T H E
H Y D R O C E L E.

SOME chirurgical diseases allow some delay for their cure, others require immediate assistance. Many infirmities incident to the human frame, are of this kind. The disease commonly known by the name of Watery Rupture, and in surgery, by that of Hydrocele, belongs to

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the first class. It often attends infants at their birth, as if affected with it in the mother's womb. Every age is likewise subject to the Hydrocele, and a perfect knowledge of it, is of the utmost importance. How many unhappy people have been victims to the ignorance of practitioners, who mistook it for another disease, and in order to cure it, an operation has been ventured on, which proved fatal to the unfortunate patient. To attain a thorough knowledge of this disorder, has been the particular study of the most learned writers of this age in Europe.

So much has been said upon the Hydrocele, and so many researches made, that it has been thought to need no farther explanation. Something however should
be

be said to clear certain points, which considered in another light, appear different from their true state. Having had occasion to see many of these cases, I have sought the opportunity to make my observations upon them, and perform the radical cure. My publishing these remarks will cause, I hope, some insight, into the different parts of the chirurgical practice, for the radical cure of the Hydrocele, as nothing shall be omitted, that may tend to explain the difficulties hitherto encountered.

I shall begin with the seat, and the different kinds of Hydroceles, determining those, that are the chief objects of radical cure, which shall be mentioned particularly. It seems almost incredible, that
even

even the seat of the Hydrocele should be disputed, but what was doubted in former times, is not so now, at least by the best practitioners.

Many are the seats which have been allotted to the Hydrocele. The first kind has its seat in the cells of the Dartos. In the second, the water lies between the Dartos and the Cremaster. If the water is contained between this and the tunica vaginalis, then the Hydrocele is of the third kind. The fourth consists in the stagnated water between the tunica vaginalis and the testicle; and the last, between the albuginea and the testicle. It is certain that any kind of Hydrocele may be formed in this place. Water stops in some part of the body, and it is natural, that

that some may stop between the different
vests of the testicle, and the spermatic
chord ; but examining it minutely, it
must be owned freely, that such a great
variety of divisions is owing rather to
caprice than reality. Let it suffice, that
water may lie in any part of the body
for some time, or for ever. It re-
mains very often in the cells of the
scrotum, but for all this an Hydrocele
may not be formed, for its denomina-
tion is occasioned only by a swelling,
composed of water contained in a sac.
The philtration of water into the cells
of the scrotum, if followed by the ana-
sarca, whether it is owing to a defect
in the organs or not, is the province
of the physician. Nevertheless it fol-
lows, that sometimes the surgeon is
occupied

occupied in giving relief to the patient who labours under its weight. The relief which in such cases can be expected from chirurgical assistance, is to give issue to the water, for which great, or small incisions are generally prescribed. The greatest are performed with extreme caution by the skilful, as it has been observed, that gangrene often follows, and hastens death. The indefatigable English surgeon, Mr. Pott, who I shall have frequent occasion to mention with all the respect due to so great a genius of surgery of the eighteenth century, relates many observations of this kind in his treatise on the Hydrocele. Small incisions may be used with safety, and these are found in practice preferable to the others. If the stagnated
water

water in the cells of the scrotum is only partial, as is often observed in infants, it gives way very easily to the vital actions, or to some little corroborative, or absorbent, and it is very rare that it is found necessary to make use of any operation.

Some writers of surgery have hesitated to believe that the most frequent kind of Hydrocele should be between the tunica vaginalis, and the testicle. This wonder is destitute of all reason, as in the most healthy state, there is always a little fluid in the cavity of the tunica vaginalis. Whenever for some reason it happens, that a greater quantity of water extravasates this certainly will fix more easily between the tunica vaginalis, and
the

testicle, than any other place. I cannot imagine how some people have doubted, that this kind of Hydrocele is the most frequent, and precisely that, which according to the true rules, I do believe must be considered as the true specie.

The water that composes the Hydrocele of the tunica vaginalis of the testicle, has sometimes its seat between this, and the foresaid tunica, and at other times between the vaginalis, and the spermatic chord. Hydatides which are sometimes found in the tunica vaginalis, hinder very little the cure, as I shall have occasion to mention hereafter, when I come to speak of the complications of the Hydrocele. Before I enter on the particulars of an Hydrocele, and of its cure,

cure I shall mention that, which is observed on the abatement of that inflammatory tumor of the testicle, known by the name of spermatocele, generally attending the venereal disease; at the beginning, this tumor does not shew the least transparency, but at the end becomes quite lucid.

The water that forms this Hydrocele dissipates gradually, in proportion as the solids regain their force, and in this manner the disease ends. It is quite needless to give vent to the water, as it is soon replaced, and sometimes in greater quantity; the Hydrocele being nothing else but an effect of the disease. This water dissipates entirely by itself, and no remedy will contribute to it.

To prove, that the water in this case soon returns in a great quantity after the incision, I shall relate the following case.

C A S E I.

A Countryman was admitted into the Royal Hospital of Sancta Maria Nuova, in Florence, with an inflammatory tumor in his right testicle ; the disease was then in its beginning, which had no immediate, nor remote origin from the venereal disease. The common applications were not omitted to facilitate the dissolution of the tumor which generally happens. As soon as the pain was over, and the part reduced to its natural colour, the swelling became transparent all over, and the testicle recovered

recovered its perfect state. After some days the inflammation ceased, and yet the Hydrocele was the same, although the use of corroboratives was not forgotten. We resolved to give vent to the water with a lancet, and yet, in less than forty-eight hours, the same quantity of water gathered again. Some days after the same operation was repeated, and this second operation was not more successful than the first, for a greater quantity of water than what had been extracted appeared. On seeing this, we relinquished the thoughts of all further operations, and suspended all remedies, chusing rather to trust to nature, which actually produced the same effects as in many other cases, the water went off. This plainly proves what I have already said, that the delaying the operation in
such

such cases, is of the greatest consequence ; but if it is necessary to give vent to the water, it must not be done till after the inflammation is abated : for then it will be natural to believe that the solids may resist the fluids.

The Hydrocele that appears on the decline of an inflammatory tumor of the testicle and its membranes, dissipates without mercury ; for if this mineral any way contributes to it, it is only by destroying the celtic venom which is often the cause of it.

The water that forms an Hydrocele, is sometimes contained in a sac, formed in the tunica vaginalis of the testicle, and the spermatic chord. A case which I think

think very particular, upon this subject, is the following.

C A S E II.

A Boy of six years old, was admitted as a patient into the aforefaid hospital supposed to have a rupture, and particularly an enterocele ; when the tumor was pressed, the matter which formed it, went into the abdomen. This served to confirm my father, that it was an intestinal hernia. As the boy's parents, and we likewise, were very desirous to see their son delivered from such a disorder, we determined to perform the radical cure by binding the herniary sac, which method was revived with success in Florence by my father. Of this operation I
have

have spoken at large in a dissertation which I read to the Royal-Academy of Surgery at Paris in August 1778, and which I shall give to the public with many more remarks on intestinal hernias, when I shall have time to compile the many observations I made in walking with my father the hospitals of Florence, and by my practice in different hospitals in Europe. On performing the operation on this patient we discovered the supposed herniary sac, and having separated it from the parts to which it was united, we tied it as near as possible to the inguinal ring. The inflammation which followed the wound was very great, and it attacked in a very short time the intestines. The delicate child died. Death was the cause of sorrow, but we acquired

quired new knowledge by the vent. Having opened the abdominal cavity, and examined the parts which had been the seat of the operation, we could not find the least appearance of intestinal hernia. There was a little sac joined quite round the internal part of the inguinal ring, from which it descended into the tunica vaginalis where it fastened, and from which it had been parted in the operation. This sac was full of water, which retired into the interior part when the exterior was pressed, and this was what caused the mistake in believing the disease to be an intestinal hernia.

The water which composes the Hydroceles of some children, goes into the cavity of the belly when the tumor is squeezed, the

the inguinal ring not being closed. The case which I have related is quite different from ordinary Hydroceles, and I hope that I have explained myself enough upon this particular.

Water seldom stops between the cremaster and the tunica vaginalis, or between that muscle and the scrotum. Rarely in a sac formed in the vaginalis of the testicle, or of the spermatic chord. The Hydrocele which has its seat in the cavity of the tunica vaginalis testis is the most frequent. It is very easy for the most part to know the Hydrocele, but in some cases very difficult. If we treat of an ordinary Hydrocele, the transparency proclaims it, but if any of the complications which I shall have occasion to mention hereafter, are joined with the Hydrocele, what difficulty does

does not the most skilful undergo to distinguish it from another disease?

An Hydrocele has been taken for a Sarcocoele, or the latter for the former. In both cases much harm has been done. If an Hydrocele is taken for a Sarcocoele, the surgeon will think it necessary to perform castration. If a sarcocoele, or any other tumor of the testicle, or epididimis, is believed to be an Hydrocele; he will be induced to make an opening, which will prove of great detriment to the patient. My father has published a case about a tumor confined in the scrotum which was taken for an Hydrocele, in the first volume of his works on the simple method of curing. This is the case.

“ A Milanese jesuit came to Florence, with a tumor in the scrotum, of the shape of a small melon : it had a kind of suppleness similar to tumors of the fleshy mucous kind. This suppleness was thought by some professors to arise from feculent water ; but my father thought otherwise. The disease was examined by many surgeons of Italy, the majority of whom, were of opinion that it was an Hydrocele ; and it was therefore resolved to puncture it with the trocar, but to their great astonishment it was found not to contain a single drop of water. The external air admitted into the internal part of the tumor by the operation, occasioned so violent an inflammation and swelling, that it soon arrived to ten times its former bulk. Gangrene succeeded the inflammation, and the whole of this spongy tumor formed of nothing

thing but a thickening of the cellular substance and membranes, covering the testicle and spermatic chord, floughed away. When the dead parts had fallen off, the testicles a little altered were exposed without any covering ; and whilst the surgeon was waiting for nature to cover, and restore them to their wonted vigor ; the patient was attacked by one of those colics generally attending weak and debilitated persons, and the inflammation of the colon was so great, that no remedy could save his life." Thus the death of a man was hastened by an ill-judged operation, which will serve, with many other similar cases, as a caution to practitioners, not to open tumors of the scrotum, which are not of the Hydrocele kind. Surgeons have been led into mistakes, by observing that the fluid composing an Hydrocele, is sometimes extremely

tremely viscous and dark coloured; in such cases it is indeed almost impossible, at least to a hand not much accustomed to such examinations, to determine the nature of the disease.

If on examination, the tumor is not transparent, and a true insight cannot be obtained, it will be of great use to the surgeon to ask the patient about the origin of the tumor, if it was ever transparent, and likewise if it began from the bottom of the scrotum. In short, the opinion of the best practitioners should be taken in these cases; for the Hydrocele is sometimes so complicated a disease, that it is very difficult not to fall into an error. When the nature of a tumor contained in the scrotum is doubtful, instead of risking an operation, which may be dangerous,

dangerous, it is better to wait till its true nature is known.

After mentioning the seat of the true Hydrocele, which is in the tunica vaginalis testis, and of the spermatic chord, I shall speak of the cause of the Hydrocele, and proceed to examine the diseases with which it may be complicated. The Hydrocele, like many other internal or external diseases to which the human body is liable, derives its origin from either an external or internal cause. This happens sometimes from the solids not having a proper check upon the fluids, thence ensues a watery tumor which constitutes the Hydrocele. If the cause is external, the disease generally vanishes with little or no assistance from art. What is produced in the solids by a mechanical cause, may happen sometimes naturally.

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The many different parts that compose the human frame, are not always of the same power, and consequently not capable of resisting a fluid inclined to form a tumor. A dissolution of the lymphatic fluid may contribute now and then to the production of the Hydrocele, which is very frequent in infants who need no surgical assistance; but it is not the case in adults, who may have it from their infancy, or be attacked afterwards.

The cure of the Hydrocele consists in palliating the disease, or curing it radically.

THE PALLIATIVE CURE.

Surgeons in endeavouring to restore health, foresee the dangerous consequences

ces that may attend their operations, but cannot totally prevent them. An operation trifling in many cases, has been of great consequence in others, without their fault. This is the case with the palliative cure of the Hydrocele, which unfortunately for mankind, has been the cause of death. This was in consequence of an inflammation, after an opening by the trocar, or lancet. This inflammation, often terminates very successfully, and the patient enjoys the pleasure of a radical cure not in the least expected.

Wounds though ever so small, are sometimes subject to mortal inflammations, particularly when there is in the body an inflammatory disposition. How often has death followed after phlebotomy, the body being pre-disposed to inflammation?

Who

Who can be so happy as to foresee the particular state of a constitution? It is very easy for an unskilful operator to believe, that by the instrument, the testicle may have been wounded. Although experience shews us that wounds in the testicle are not generally mortal, it is yet certain, that a small pricking may be attended with fatal consequences. If the patient however has not suffered much pain in the operation, we may conclude the testicle was not touched. In the case mentioned by my father, in the first volume of his surgery, the body seemed inclined to an inflammation.

“ A man who had an Hydrocele, had the palliative cure repeated from time to time. The wound made by the trocar
was

was always easily healed. The last time by the same professor, and with the same instrument, a wound was made, which having given exit to the water, was pressed as usual, and the scrotum put into a bag-truss. The patient was quite well on the day of the operation ; but on the following he felt a little pain, the first sign of an inflammation, which in a short time arose to such a pitch, as to end in death. Upon dissection it appeared, that the testicle was not injured, the inflammation having raged only in the circumjacent parts."

The following case will exhibit quite the contrary,—a radical cure.

E C A S E

C A S E III.

“A Franciscan friar, of the convent of the Holy-spirit in Florence, had the Hydrocele from his infancy. When the water (which was always thick) was accumulated in a great quantity, it was let out by means of the trocar. At the age of 76, the bulk of the Hydrocele was too great for him to bear, so he resolved to undergo another palliative cure. There issued a great quantity of blackish water. The wound inflamed, and there ensued a gangrene in the scrotum, and in the tunica vaginalis of both testicles, which remained naked when the mortified parts separated. This separation happened quite naturally, there having been no occasion for any of those means necessary in other cases.”

cases." Hence we see daily, that which is to be recommended in one case, it not in another. " The gangrene being separated, and the wound disposed to heal, the cicatrix began to form, and to extend with a strength proportionable to such advanced age, and a radical cure was obtained, when no operation could prudently have been recommended."

This was one of those cases, where the gangrene turned out to the advantage of the patient, but how many other times (and particularly when it depends upon an internal cause) has it been fatal.

The wound for the palliative cure is made with the lancet or trocar, which last leaves in it a cannula that facilitates very much the issue of the water, which does
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not pass so easily through a wound made by a lancet ; and to give this facility, it is often necessary to introduce a hollow probe, whose introduction is sometimes painful to the patient. The perforation made by the trocar is therefore preferable to that of the lancet. The trocar must be of a proportionable size, smaller than that commonly used for the paracentesis. The opening should be made at a distance from the testicle ; the center of the tumor will be the least dangerous, and the most proper place.

Sometimes, in consequence of the perforation for the palliative cure of the Hydrocele, an ecchymosis has happened. I have observed two kinds of ecchymosis, the first consists in blood poured into the cells of the scrotum ; this was in consequence

quence of the wound in the tunica vaginalis, not being opposite that of the scrotum: the blood having found means to insinuate itself into the cells of the dartos, as it often happens in phletobotomy. This ecchymosis is of no consequence, and will soon vanish.

The other kind of ecchymosis was produced by blood retained in the same cavity which contained the water. The branch of an artery, either wounded by the instrument, or disposed to open itself when the water was gone, deposited some blood in the cavity of the tunica vaginalis testis and of the spermatic chord.

C A S E

C A S E IV.

“ A Young man would never submit to the radical cure of the Hydrocele, finding himself relieved by the palliative. The last time it was performed with a trocar, the water that issued was a little turbid: the patient said, that he suffered no more pain than at other times. A short time after, the scrotum swelled to a size equal to the Hydrocele. The tumor increasng, the patient went to the hospital. My father found that what extended the scrotum, was extravasated blood. The patient's strength was so impaired, that frequently he fainted away. The tumor was opened by a longitudinal incision, and a great quantity of blood was found in the tunica vaginalis

lis by the bleeding of a branch of an artery. The blood being removed, a little compness of dry lint was applied with a proper bandage; by the compression, the artery closed, the wound suppurated kindly, and healed in a short space of time. Thus the disease was radically cured.

THE RADICAL CURE.

This cure is sometimes obtained contrary to the surgeon's expectation, by an inflammation which ensues the operation of the palliative cure.

Many are the methods prescribed by antient authors, and practised by the moderns, for the radical cure of the Hydrocele. Operators, view the possibility of performing it differently, and the

the methods they have put in practice, are various according to their ideas. To determine which of them is the best, one must decide in what it ought to consist.

Some have supposed, that the radical cure of the Hydrocele could not be obtained without the destruction of the tunica vaginalis of the testicle, and of the spermatic chord, whenever it was equally concerned in the disease. Others say, that the destruction of the tunica is unnecessary, and that abolition of its cavity is sufficient. From these different opinions derived the various means, which have been practised.

A florid

A florid and elegant diction may mislead the reader, but these observations are founded on facts.

The radical cure of encysted tumors, consists in the destruction of the cysts, or sacs, that contain the matter. The destruction of the membranes which form these unnatural cysts, is absolutely necessary, for if a relapse should ensue, the remains might be supposed to be the cause, though I am persuaded this supposition is without foundation.

The water of the Hydrocele, is contained in a natural sac, or cyst, formed by the tunica vaginalis of the testicle, and of the spermatic chord. A natural part, becomes unnatural when altered by some cause: thence it is easy to conclude, that

the destruction of the tunica vaginalis is necessary to establish a radical cure, when it is so changed, as not to be capable of passing again into its natural state. On the contrary, its destruction is unnecessary when in a sound state, as in most cases it has proved. In this last case, I think I am warranted to conclude, from the experience I have had, that so far from its destruction being requisite, that even an exfoliation is needless. The cure of the Hydrocele having proved in some cases imperfect, it was supposed that this imperfection arose from part of the tunica vaginalis being left. Mr. Bertrandi, one of the best Italian surgeons, was of this opinion, and he agreed with the famous French surgeons, Le Dran and Garengéot, in the propriety of destroying that part of the tunica vaginalis, which

resisted

resisted the inflammation, with some kind of caustic. Hence seems to have arisen the whim of using a caustic more or less powerful, as the antimonial butter made by Mr. Bertrandi, and the aluminous water recommended by Le Dran. Although some patients have relapsed, it has not been owing to a remnant of the tunica vaginalis, but to the inattention of the surgeon in suffering the external wound to close, before a complete obliteration of its cavity had been obtained. All that is wanted to perfect a cure of the Hydrocele is the abolition of the cavity of the tunica vaginalis, except when the tunic is in an unsound state, then it will be necessary to destroy it.

It will be proper to make some observations upon the alterations produced in the
parts

parts by a course of inflammation, and of that which proceeds slowly, and consists in a change of nature and texture. This observation is of great importance, since in the last case a surgical operation was necessary ; but not so in the former, as will appear by

C A S E V.

A Man of 70 years of age, of a strong constitution, and by trade a hoop-maker, in Florence, had been afflicted with an Hydrocele from his infancy ; from the inconvenience of which, he was delivered by the palliative cure, as often as the water was collected in any great quantity ; his occupation did not allow him to undergo the radical cure. Mr. Becherini

cherini repeated the operation with the frocar in 1776. The wound inflamed, and there ensued a great swelling of the scrotum, which quickly increased to twice its former size. The little wound continued open, and discharged a small quantity of sanious matter. The patient was carried to the hospital Santa Maria Nuova, and put under the care of my father, who, finding an evident fluctuation of fluid, opened the tumor its whole length, which gave exit to a large quantity of bloody ichor. Some of the purulent matter adhered to the sides of the sac, formed by the tunica vaginalis and scrotum, which were thickened to a finger's breadth. This unnatural change of parts was produced by the inflammation which followed the wound of the frocar. Washing with warm water, and
the

the application of dry lint, were the only dressings used to cure the wound which was very deep, at the bottom of which the testicle was perceived in a perfect state. The inflammation subsided in some days, and the parts recovered their perfect state of health. The tunica vaginalis, which had been so thickened, returned to its natural state. The inflammation and swelling of the parts having gone off, they were drawn into contact, and followed by a reciprocal adhesion. The deep cavity was intirely filled by new healthy flesh, and the formation of a cicatrix, compleated a radical cure, which was begun only as palliative.

By

By this, and other cases that I could relate, I am fully perswaded, that the swelling and hardness of the tunica vaginalis produced by inflammation, will generally subside, and not require excision. On the contrary, when the thickness and hardness, is not the effect of mere inflammation, but of a disease whose progress has been slow, then excision will be necessary. But it must not be blindly believed, that a cure cannot be obtained, when the tunica vaginalis is only a little thickened and indurated.

C A S E VI.

A Young country man on the 7th of May 1772, in the hospital of Santa Maria Nuova, had an incision performed for the radical cure of the Hydrocele. The
tunica

tunica vaginalis was a little swelled, and hardened. This swelling was disregarded, knowing that it would not obstruct the cure. The wound was dressed with dry lint, and not disturbed for three days, when the dressing was removed. The supuration was large during the inflammation, and the parts swelled and hardened more. When the inflammation was over, the tunica vaginalis returned to its natural state as we had seen in many other cases; the parts came into contact, and the radical cure took place. The swelling of the tunica vaginalis did not hinder in the least the cure, which was performed in about forty days.

It is not a little satisfactory to have suspended in many instances, the use of instruments

ments and other severe methods. Had, in the last case, the hardened part been cut off, it is impossible to tell the consequences that might have ensued. Daily observations evince, that an inflammation although it alters the parts, yet it disposes them to regain their first state, provided they have not lost their organization; if they have, then instruments must be necessary, but they should be used with caution. If the tunica vaginalis should be a little swelled and hard, the best way is to wait the effect of the inflammation; if that does not avail, there will still be time enough for subsequent operations.

I have endeavoured to prove by the preceding facts, that the destruction of the tunica vaginalis is not necessary, if

its cavity can be annihilated. I find another convincing proof for my opinion in the cure obtained by irritating the interior part of the tunica vaginalis, either by some instrument, or strong liquor. The former as well as the latter, has produced inflammation, suppuration, and adhesion of the parts, and the radical cure of the disease.

By the foregoing observations, we may easily perceive, in what consists the radical cure of the Hydrocele. The methods very proper in some, and improper in others cases, may be reduced to seven, incision — excision — caustic — seton — tent—irritation—and percussion.

If authors, who have written on surgery, had viewed the cases before them
with

with the same eye, how much more simple and easy, would have been the practical part of the profession.

Some for the sake of singularity, have invented a variety of absurd methods, which have been approved only by those, who are attracted by novelty.

THE CURE BY INCISION.

The surgeon for the radical cure of encysted tumors, has chiefly recourse to incision, which is also applied to the cure of the Hydrocele. When incision does not answer the purpose, excision is necessary.

The learned and immortal Celsus, describing the manner of operating, says,
that

that it is necessary to open the integuments, and separate the internal membranes; viz. the different strata of the tela cellulosa, and the tunica vaginalis; and adds, that sometimes it is proper to amputate some of the parts affected. What is recommended by so great a man, is always to be respected; and if many things published in his works are well considered, we shall find, that the moderns, do not differ much from the ancients. The precise method of Celsus, is not however necessary, as an incision may be made at once into the cavity of the tunica vaginalis testis.

Incision has been condemned by many, but I cannot guess what idea they formed to themselves either in the use of it, or in the cure subsequent to the operation. The operation

operation is trifling, in comparison to the merit of the cure.

It is easy to say, that there are objections to incision ; and it is easy to prove, that the other methods have their inconveniences.

I shall here examine what are the objections to incision, which I think may be divided into two. First, the testicle may be injured in the operation ; and secondly, the radical cure has not always been obtained. I shall answer the first objection by describing the operation. It consists in the opening of the tumor, as in the case of an abscess. This opening may be made with a bistory, from top to bottom, or vice-versâ. But there is more danger of hurting the testicle in the latter

latter method, than by the former, as it has sometimes happened, although the reflection of a candle, placed at the opposite part of the tumor, shewed exactly where the testicle lay. To avoid this error, it is better to begin the incision at the upper part and carry it downwards, at the same time ; or by introducing a hollow probe, which will direct the cutting instrument. The incision should be made the whole length of the tumor, as thereby a full view may be had of the bottom, and a total abolition of the cavity of the tunica vaginalis, may be more certainly accomplished ; for if this cavity is not totally destroyed, a relapse will ensue. After the incision, the cavity must be filled with dry lint, which should not be removed for some days, until loosened by suppuration, so as to come off without
much

much pain. Some lenient application on the lint, should now be used. A fever generally accompanies the inflammation, but does not last long. The fever, with the inflammation and swelling of the parts, gradually subside, and the cure is terminated by a mutual adhesion of the tunica vaginalis and testicle, and total annihilation of the cavity which contained the water. As the cavity of the wound obliterates, the cicatrix on its surface begins to form, and extend. The same dressings may be continued, and will, for the most part, be found sufficient to heal the wound. In the course of the cure, some mild caustic may be necessary, to keep down the luxuriant granulations of flesh.

The radical cure of the Hydrocele by incision, begun, continued, and ended in
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the manner I have described, does not take a long time. It is usually compleated in the course of forty or fifty days ; sometimes in a month.

The cure by incision is easy, and safe, if properly attended to. Let me repeat it however, for the importance of the subject requires it, that if the surgeon is not careful to prevent the external wound from closing, before the internal cavity is totally obliterated, the cure will be incomplete, and that will be attributed to the method, which was entirely the fault of the surgeon. The disadvantages attending this, is daily happening to the other methods, of which I shall speak, without partiality for one, more than another.

THE CURE BY EXCISION.

Those parts, that have suffered so great an alteration by disease, that they cannot be restored to their natural state, must undergo amputation. Upon this principle, excision would be very just, but the removal of the tunica vaginalis, when in a sound state, is giving unnecessary pain, without the least advantage to the patient; the annihilation of its cavity, being alone sufficient.

It is but seldom, that the swelling and hardness of the sac, happens in the simple Hydrocele, but is very common in diseases of the testicle, whether a Sarcocoele, or Hydro-sarcocoele.

Mr. Douglas has advised excision for the radical cure of the Hydrocele, even in the sound state of the tunica vaginalis. Whether it is proper or not, I have spoken

at large. The manner of performing the excision is different. Mr. Douglas advises an oval excision, in which should be comprehended that part of the scrotum, and tunica vaginalis, which is intended to be destroyed. There are objections, which might be made to this manner of operating by excision, but I shall confine myself to the cases where the tunica vaginalis is diseased. In my opinion, it is better to make an oblong incision with the knife, or scissors, and then remove the parts affected; so doing, the surgeon cannot repent of having cut too much.

Some may think, that cases in which excision should be preferred, happen often, but I am of a contrary opinion, from the number of Hydroceles I have had opportunities of seeing.

THE CURE BY CAUSTIC.

Surgeons have been induced to use caustics, on account of the terror many patients have of instruments.

It would be useless to repeat what many writers have said, or to search who was the first that used caustics for the radical cure of the Hydrocele. These are inquiries and disputes which are to be found in other books. Among modern authors M. Sabatier's dissertation on the Hydrocele, inserted in the memoirs of the Royal-Academy of Surgery at Paris, deserves the highest praise.

Radical cures have been obtained by the caustic, without any incision so dreaded by the patient; thence caustics
came

came into repute. Much has been said for, and against this method. The caustic causes an inflammation, which is indispensably necessary for a radical cure. It produces an eschar which generally falls off in some days; at other times remains so long, that it is necessary to make an incision to let out the water, and in this manner mitigate the pain caused by the inflammation, which diminishes when the parts are relaxed, by giving vent to the water. Mr. Garenggeot having found it necessary to make an incision in many cases, after the caustic had been used, alledged, That the caustic was useless, since it was necessary to make an incision also. I know very well, that incision is not wanted in all cases, where caustic has been applied, but in some instances.

stances it is, as the following case will prove.

C A S E VII.

MR. Anthony Danville, a Lorrainese, at the Royal Court of Florence, with a strong constitution; put himself under the care of an old surgeon, for the cure of an Hydrocele, who applied on the tumor a caustic of a proper size. The inflammation produced by the caustic was very great. A violent fever, swelling, and pain soon followed. This was his situation when my father was consulted. The eschar, did not seem disposed to separate, and the pain was so great, that my father resolved to let out the water by an incision, which abated the pain immediately.

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The cure was the same as in the simple incision, and proved radical.

Mr. Else, first surgeon to St. Thomas's Hospital, in a treatise on the radical cure of the Hydrocele, mentions his having cured many by caustics. He thinks, to obtain a perfect cure, it is absolutely necessary totally to destroy the tunica vaginalis. The obliteration of its cavity, is what must always be in view. Most of the cures performed by this English surgeon, of great merit, by caustic, have been effected in 26 days, others have required a month. The purpose of the surgeon, is to obtain a radical cure, and it is not of the least importance, that the cure, be ten days, more or less in performing. The radical cure of the Hydrocele by caustic, is obtained by applying a certain quantity on a
part

part distant from the testicle, by which an eschar is formed. The inflammation caused by this application soon appears; when the eschar is separated, the water gushes out; the same opening that gives exit to the water, allows likewise of any matter to pass, which may be produced in the cavity of the tunica vaginalis, a part of which sometimes exfoliates. The exulceration of the internal parts of the sac, favor their adhesion; the accomplishment of which, is the cure. It often happens, that in endeavouring to favor any particular method, all its inconveniences are omitted, and its advantages held up in the most favorable light. The reason why this method is preferred is, first, because the use of instruments is unnecessary: secondly, the patient is not hindered from his occupations, and it may be done

at home by the patient himself; but if it is necessary for him to go from one place to another, I do not know how he can do it, with a part that is swelled and painful. If the inflammation has been moderate in some cases, where the caustic has been applied, there are examples where it has been very great. In other cases, the necessity of using instruments when the patient had hoped to avoid them on account of the caustic, is one of the strongest motives not to speak much in its praise. The caustic by no means saves the pain, but the dread of instruments; and it may be necessary to use them at last.

It is reasonable to expect, that caustics may radically cure, and experience proves it, but this cannot be a sufficient reason
for

for preferring it, to a more sure, and less painful method,—incision.

THE SETON.

An old custom in surgery, against which many of the most experienced have exclaimed, is that of opening an abscess in its two extremities; and passing a seton through, in order to cleanse that part of it which is concealed from his senses. Such an operation has been likewise performed for the radical cure of the Hydrocele. The ancients used this method, and modern practitioners have revived it with success. Mr. Pott having expatiated on the radical cure of the Hydrocele, has brought this method into repute in England. This very experienced surgeon, in his practice for many years, used incision; and

altho' it answered very well, yet he thought proper to quite it for the seton. The manner of passing it, is at the option of the operator, but the easiest method, is to introduce a trocar as in the palliative cure, and through its cannula, a sharp needle with a skain of silk, out at the opposite part of the tumor. Inflammation arises, which is great or small, according to the patient's constitution. The seton should not be moved for some days, whilst the inflammation is in its vigor, during which anodyne topics may be used to mitigate the pain. When the inflammation and swelling are abated, and suppuration come on, the seton must be taken out by degrees, pulling one thread at a time, after which the parts will unite, and the radical cure be performed.

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The seton, like other methods, will produce a radical cure, at least in the greatest number, but it is more painful than simple incision, where there is the essential advantage of discovering the interior parts of the disease; and the surgeon is sure, that the cavity is intirely obliterated, of which he can never be certain, in the method by the seton, nor in that which I am going to mention.

T H E T E N T .

The methods described hitherto, and practised with success, did not hinder practitioners from trying others, perhaps in their opinion easier and safer. Ruych in Holland, and Marini in Italy made use, very possibly, at the same time, of the tent. It is not certain to which of them
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the honor, if any, belongs. This method is practised in the following manner: The tumor being pressed to make the skin tense, an opening is made with a bistory, or lancet, so large as to admit a thick tent, which must be immediately introduced, before the water comes out, for afterwards its introduction would be very difficult, and likewise more painful, the parts being flaccid. Heister, mentioning the method of the tent, wonders why Marini should advise not to let out the water; but the reason for it, is already given. The tent introduced into this artificial wound, to keep it from closing, excites an inflammation, from which a most painful swelling of the scrotum arises, that is almost always attended with fever. A poultice is proper to ease the pain.

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The tent must be renewed some days after, but not till suppuration is come on, when it may be withdrawn with less pain. A new tent with some soft liniment, must be introduced once or twice a day, in proportion to the discharge; and the tent gradually lessened, and finally suppressed. That the radical cure, even with this method, may be perfect, the cavity of the tunica vaginalis must be obliterated. Many radical cures have been performed by means of the tent. Mr. Baciocchi, first surgeon of the great hospital of Brescia in Italy, and my father at Florence, practised this method with great success.

The cures were not all completed in the same space of time, but mostly in less than
a month

a month. In those cases where the inflammation, and suppuration, have been greatest, there was less danger of a relapse; as it happened in the following case.

C A S E VIII.

THE Marquis Albizzi of Cesena, came to Florence in October 1774, to be cured of a disease, which troubled his mind more than his body. This was an Hydrocele, and a small swelling of the testicle. He had undergone several times the palliative cure. Mr. Molinelli, a surgeon of great merit in Bologna, having visited this nobleman, told him, that the extirpation of the testicle was necessary, supposing it to be an Hydro-sarcocoele. My father thought the testicle was not in such a state as to require extirpation, and that the

Hydrocele

Hydrocele was the chief disease. The cure was begun with the tent, according to the above mentioned method, on the second of October.

The night after the operation, our patient was attacked with a shivering and fever, which continued for some days. The inflammation that caused the fever, appeared in the scrotum by a red and painful swelling. The morning of the sixth day after the operation, the tent was taken out for the first time, and immediately another was introduced, a little smaller, and daily lessened; and on the 24th day, it was intirely suppressed, the swelling being totally subsided, and the supuration over. The wound was almost cicatrized, when a new tumor appeared, which augmented slowly. It was immediately

diately thought, to be a new Hydrocele and so it proved on examination. It was directly opened by an oblong incision, long enough to exhibit all the internal part of the sac, which contained the water. This incision was healed in the simplest and surest manner, and the patient enjoyed a perfect cure.

Besides the uncertainty of obtaining a cure, by the tent, it is also extremely painful, owing to the necessity of renewing it often.

In the method by incision, the disease is all under the immediate inspection of the surgeon, who sees likewise the testicle, which may be affected, although no outward sign appears. In incision, the pain is not considerable, and in the subsequent dressings it is trifling.

IRRITATION.

By means of irritaion, inflammation has been excited, from which the radical cure has proceeded. It has been proposed to inflame the tunica vaginalis by irritating it with a pointed instrument, or by injecting into its cavity a strong liquor; but this method, though in some cases successful, is not exempt from inconveniences. The injected liquor may remain inclosed for want of passage, and then the surgon be obliged to use incision, after the patient was flattered with the hopes of a perfect cure without it.

I have the following case from Mr. Gurfaud, professor of surgery at the college of St. Come in Paris.

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C A S E

C A S E IX.

A Man who had an Hydrocele, put himself under the care of a Parisian surgeon, who made an opening into the tumor, and injected into its cavity some spirit of wine, great pain with inflammation, and fever came on, and it was found necessary to make an opening, to let out the fluid; in consequence of the incision, a radical cure was obtained.

We need not be surprized, that the injection of astringent liquors should produce a radical cure, since the same is experienced in children, by insinuating some corroborating liquor through the pores of the part affected. Neither spirit of wine, nor a strong alkaline solution so recommended, should be used in the
injection

injection. The inconveniencies have already been mentioned.

I have said, that an inflammation has been provoked in the tunica vaginalis, by irritating it with a sharp instrument.

A surgeon of Paris cured his son by making an opening into the tumor, and irritating the tunica vaginalis with a sharp probe, by which an inflammation was excited, and a radical cure obtained. Radical cures, have sometimes been produced by accidental blows ; hence, percussion has been prescribed as a method of cure.

P E R C U S S I O N .

Doctor Reghellini, a Venetian, to whom surgery is indebted for many useful

ful observations, proposed this method, which by accident was successful in the following case:

C A S E X.

AN English gentleman, in the course of many years, had the palliative operation performed in Venice by Doctor Reghellini, several times. He was determined at last to undergo the radical cure by incision. As he was travelling through Italy with the doctor, one day he stopped at a place where they were playing at bowls ; one of them happened to strike him on the Hydrocele, and gave him most excruciating pain. Reghellini comforted him by saying, That the blow might put him in a fair way of obtaining the radical cure. The part inflamed,

inflamed, and suppurated. With the inflammation ended the disease.

Others have been cured by similar accidents. The case mentioned by Mr. Pott, is exactly of this kind.

Doctor Reghellini 1764, in his observations on chirurgical cases, published some remarks on the radical cure, by percussio. He proposes to try it in all cases of the Hydrocele, but though it succeeds in some, it may be dangerous in others.

Some of the above mentioned methods viz, incision, seton, caustic, irritation, and others, contribute to perform the radical cure by exciting inflammation and adhesion. Other methods consist in carrying away a piece of the sac that contains the
water,

water, by excision. I have remarked, that excision is not necessary, except when the tunica vaginalis is diseased, and much altered from its natural state. When the cavity is totally abolished, then the cure will be perfect. Amongst the various methods proposed, the best should be preferred; founded in practical observations, on which consists the merit of this book.

About excision, enough has been said; and when I spoke of incision, I observed, that its greatest perfection, consisted in the surgeons having a complete view of the seat of the disease, and discovering whether the cavity of the tunica vaginalis is totally annihilated, and the testicle in a sound state.

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The true nature of the disease of the testicle, in an Hydrocele, was perfectly understood by means of incision in the following case.

C A S E XI.

A Country man was taken into the Royal Hospital of Santa Maria Nuova, on the 22d of April 1769, with an Hydrocele. His cure was begun by incision, which let out a large quantity of thick water. The testicle was entirely rotten, but this did not prevent the cure being pursued in the usual way, and the cavity of the tunica vaginalis was filled with dry lint. The inflammation which ensued, disposed the diseased testicle to separate; after the separation of the dead parts, the wound

wound healed, and a complete cure was effected.

In the subsequent case, there were hydatides scattered along the spermatic chord.

C A S E XII.

A Young country-man had an Hydrocele, from his infancy. The tumor growing troublesome, he resolved to undergo an operation for a radical cure. He was cured by incision in the hospital. When the tunica vaginalis was opened, there were found dispersed along the spermatic chord, and on the testicle, many small hydatides, which were opened with the scissors. The cure was managed in the simplest

simplest way, and the patient left the hospital in a short time, perfectly cured.

A disease in the testicle, is often connected with the Hydrocele. The former should be particularly attended to by the surgeon, as the water may proceed from the affection of the testicle. It is not my intention to speak here of this disease, which so united, forms the Hydro-farcocoele.

The chief end of this treatise was to determine which of the various methods practised for the radical cure of the Hydrocele, ought to be preferred. I should think that by incision, in the majority of cases.

I have endeavoured to fulfil what I proposed, by observations founded on
experience,

experience, the surest guide in matters of importance. The cases I have recited, were necessary to illustrate the different methods adopted, by the most celebrated practitioners of this enlightened century in many kingdoms of Europe.

T H E E N D.

